

CLAIMS

What is claimed is:

- 1 1. A circuit for regulating the output power of a power amplifier during a switching transient comprising:
 - 3 a detector circuit coupled to a regulator and to a control signal that is generated to control the output power of the power amplifier, wherein the detector circuit detects switching transients of the power amplifier; and
 - 6 a circuit coupled to the regulator for applying a signal to decrease the settling time of the regulator during a detected switching transient.

- 1 2. The circuit of claim 1, further comprising a timer circuit coupled to the bias circuit and the detector circuit for controlling when the signal is applied to the regulator.

- 1 3. The circuit of claim 2, wherein the timer is a pulse generator.

- 1 4. The circuit of claim 2, wherein the timer is a 1-shot timer.

- 1 5. The circuit of claim 1, wherein the detector detects when the voltage level of the voltage control signal drops.

- 1 6. The circuit of claim 1, wherein the detector is comprised of a slew detector.

- 1 7. The circuit of claim 1, wherein the circuit decreases the settling time of the regulator by applying a bias current to the regulator.

1 8. The circuit of claim 1, wherein the circuit decreases the settling time of the
2 regulator by applying a bias voltage to the regulator.

1 9. The circuit of claim 1, further comprising a second regulator, wherein the circuit
2 decreases the settling time of the regulator by selectively using the first and second
3 regulators.

1 10. The circuit of claim 1, further comprising a switching device coupled to the
2 detector, wherein the circuit decreases the settling time of the regulator by turning on the
3 switching device in response to a detected condition.

1 11. The circuit of claim 10, wherein the switching device is coupled to a bias circuit
2 and the regulator for biasing the regulator while the switching device is turned on.

1 12. A circuit for regulating the output power of a power amplifier during a switching
2 transient comprising:
3 a regulator;
4 a detector for detecting a condition relating to the operation of the regulator; and
5 control circuitry coupled to the regulator for decreasing the settling time of regulator in
6 response to a detected condition.

1 13. The circuit of claim 12, further comprising a timer coupled to the detector and the
2 control circuitry for controlling the duration that the control circuitry controls the output
3 power of the regulator in response to a detected condition.

1 14. The circuit of claim 13, further comprising delay circuitry for delaying when the
2 control circuitry controls the output power of the regulator in response to a detected
3 condition.

1 15. The circuit of claim 12, wherein the output level of the regulator is controlled by a
2 power control signal, and wherein the detector detects a condition relating to the power
3 control signal.

1 16. The circuit of claim 15, wherein the detector detects when the power control
2 signal level drops.

1 17. The circuit of claim 12, wherein the control circuitry varies the speed at which the
2 regulator is able to respond to a detected condition.

1 18. The circuit of claim 17, wherein the regulator is dynamically biased in response to
2 a detected condition.

1 19. The circuit of claim 12, wherein the control circuitry varies the method by which
2 the regulator controls the output power of the power amplifier in response to a detected
3 condition.

1 20. The circuit of claim 19, further comprising switching circuitry for selectively
2 activating two or more regulators in response to a detected condition.

1 21. The circuit of claim 12, wherein the regulator is a voltage regulator.

1 22. The circuit of claim 12, wherein the regulator is a current regulator.

1 23. A method of controlling a regulator comprising the steps of:
2 detecting a condition relating to the operation of the regulator; and
3 in response to a detected condition, applying a signal to decrease the settling time of the
4 regulator.

1 24. The method of claim 23, further comprising the step of applying the signal to the
2 regulator for a predetermined amount of time.

1 25. The method of claim 23, wherein the signal is a bias voltage.

1 26. The method of claim 23, wherein the signal is a bias current.

1 27. The method of claim 23, further comprising the step of providing a power control
2 signal to control the output power of the regulator, wherein the detector detects a
3 condition relating to the power control signal.

1 28. The method of claim 27, wherein the detector detects when the power control
2 signal level drops.

1 29. A method of controlling a regulator used with a power amplifier comprising the
2 steps of:
3 providing first and second regulators for providing power to the power amplifier;
4 detecting a condition relating to the operation of the regulators;

5 in response to a detected condition, using any combination of the first and second
6 regulators to provide power to the power amplifier.

1 30. The method of claim 29, wherein the step of detecting a condition further
2 comprises the step of determining when a power control signal drops.

1 31. The method of claim 29, further comprising the step of providing a timer for
2 controlling the duration that the second regulator provides power to the power amplifier.

1 32. The method of claim 29, further comprising the step of providing switching
2 circuitry for controlling when the first and second regulators provide power to the power
3 amplifier.

1 33. The method of claim 29, wherein the first and second regulators are voltage
2 regulators.

1 34. The method of claim 29, wherein the first and second regulators are current
2 regulators.

1 35. The method of claim 29, wherein the first regulator is a current regulator and the
2 second regulator is a voltage regulator.

1 36. A method of controlling a regulator for a power amplifier comprising the steps of:
2 providing a regulator;
3 providing current to the regulator to power the power amplifier; and
4 selectively applying a signal to the regulator to control the settling time of the regulator.

1 37. The method of claim 36, further comprising the steps of detecting one or more
2 conditions relating to the operation of the regulator and selectively applying bias current
3 to vary the settling time based on the detected conditions.

1 38. The method of claim 36, further comprising the step of providing a timer for
2 controlling the duration of the applied control signal.

1 39. The method of claim 36, wherein the regulator is a voltage regulator.

1 40. The method of claim 39, wherein the signal is comprised of a bias voltage.

1 41. The method of claim 36, wherein the regulator is a current regulator.

1 42. The method of claim 41, wherein the signal is comprised of a bias current.

1 43. A circuit for regulating the output power of a power amplifier during a switching
2 transient comprising:
3 a regulator;
4 a detector for detecting a condition relating to a power amplifier control signal; and
5 control circuitry coupled to the regulator for controlling the settling time of the regulator
6 in response to a detected condition.

1 44. The circuit of claim 43, further comprising a timer coupled to the detector and the
2 control circuitry for controlling the duration that the control circuitry controls the settling
3 time of the regulator in response to a detected condition.

1 45. The circuit of claim 44, further comprising delay circuitry for delaying when the
2 control circuitry controls the settling time of the regulator in response to a detected
3 condition.

1 46. The circuit of claim 43, wherein the detector detects when the power amplifier
2 control signal level drops.

1 47. The circuit of claim 43, wherein the regulator is a voltage regulator.

1 48. The circuit of claim 43, wherein the regulator is a current regulator.